

Claims

1. An exhaust gas cleaning catalyst comprises a tetragonal-system composite oxide which is produced through a neutralization coprecipitation-drying-firing method and which is represented by A_2BO_4 (wherein A represents at least one member selected from the group consisting of Ca, Sr, and Ba; and B represents at least one member selected from the group consisting of Mn, Fe, Ti, Sn, and V), and a noble metal component which is present in the tetragonal-system composite oxide as a solid solution or which is carried by the composite oxide.

2. An exhaust gas cleaning catalyst comprises a substrate formed of a ceramic or metallic material, and a layer of an exhaust gas cleaning catalyst as recited in claim 1 carried on the carrier.

3. An exhaust gas cleaning catalyst comprises a substrate formed of a ceramic or metallic material; a layer of a tetragonal-system composite oxide as recited in claim 1 or a layer of an exhaust gas cleaning catalyst as recited in claim 1, carried on the carrier; and a layer of a porous inorganic refractory oxide carrying a noble metal component, the layer being carried by the layer of the tetragonal-system composite oxide or the layer of the exhaust gas cleaning catalyst.

4. An exhaust gas cleaning catalyst comprises a substrate formed of a ceramic or metallic material; a layer

of a tetragonal-system composite oxide as recited in claim 1 or a layer of an exhaust gas cleaning catalyst as recited in claim 1, carried on the carrier; and two or more layers of a porous inorganic refractory oxide each carrying a noble metal component, the layers being carried by the layer of the tetragonal-system composite oxide or by the layer of the exhaust gas cleaning catalyst, and the noble metal components carried by the porous inorganic refractory oxide layers differing from one another.

5. An exhaust gas cleaning catalyst as described in any of claims 1 to 4, wherein the tetragonal-system composite oxide is Ca_2MnO_4 .

6. An exhaust gas cleaning catalyst as described in any of claims 1 to 5, wherein the noble metal component is rhodium, palladium, or platinum.

7. An exhaust gas cleaning catalyst as described in any of claims 1 to 6, wherein the inorganic refractory oxide is Al_2O_3 , SiO_2 , ZrO_2 , CeO_2 , CeO_2 - ZrO_2 composite oxide, or CeO_2 - ZrO_2 - Al_2O_3 composite oxide.

8. An exhaust gas cleaning catalyst as described in any of claims 1 to 7, wherein the tetragonal-system composite oxide which is produced through a neutralization coprecipitation-drying-firing method and which is represented by A_2BO_4 is obtained by treating, with an aqueous ammonium carbonate solution, an aqueous solution containing (a) at least one member selected from the group consisting of nitrates of Ca, Sr, or Ba and (b) at least one member

selected from the group consisting of nitrates of Mn, Fe, Ti, Sn, or V, to thereby co-precipitate a co-precipitation product including a precursor; subjecting the co-precipitation product to filtration; drying the filtered product; and firing the dried product at 800 to 1,450°C.

9. A method for producing a tetragonal-system composite oxide which is represented by $A_2B O_4$ (wherein A represents at least one member selected from the group consisting of Ca, Sr, and Ba; and B represents at least one member selected from the group consisting of Mn, Fe, Ti, Sn, and V), characterized in that the method comprises treating, with an aqueous ammonium carbonate solution, an aqueous solution containing (a) at least one member selected from the group consisting of nitrates of Ca, Sr, or Ba and (b) at least one member selected from the group consisting of nitrates of Mn, Fe, Ti, Sn, or V, to thereby co-precipitate a co-precipitation product including a precursor; subjecting the co-precipitation product to filtration; drying the filtered product; and firing the dried product at 800 to 1,450°C.

10. A method for producing a tetragonal-system composite oxide which is represented by $A_2B_{1-x}C_xO_4$ (wherein A represents at least one member selected from the group consisting of Ca, Sr, and Ba; B represents at least one member selected from the group consisting of Mn, Fe, Ti, Sn, and V; C represents a noble metal; and x is 0.01 to 0.5), characterized in that the method comprises treating, with an aqueous ammonium carbonate solution, an aqueous solution

containing (a) at least one member selected from the group consisting of nitrates of Ca, Sr, or Ba and (b) at least one member selected from the group consisting of nitrates of Mn, Fe, Ti, Sn, or V, to thereby co-precipitate a co-precipitation product including a precursor; subjecting the co-precipitation product to filtration; drying the filtered product; and firing the dried product at 800 to 1,450°C; and immersing the fired product in a basic aqueous solution of a noble metal salt, thereby causing the noble metal to be carried in a predetermined amount by the fired product, followed by firing at 300 to 600°C.